REMARKS

Claims 1-13 are currently pending. Reconsideration of this application is requested in view of the following remarks.

Rejection under 35 U.S.C. § 112, first paragraph

The Examiner rejects claims 1-9, covering thermotropic liquid crystalline polymer molded articles, for lack of enablement. More specifically, he asserts that "the specification, while being enabling for the thermal conductive polymer molded article [that] has the first conductivity of between 0.7 and 20 W/(m·K) and the density of 1.10 to less than 1.5 g/cm^3, does not reasonably provide enablement for the molded article outside these ranges." See the Office Action, page 2, lines 3-6. Applicants disagree.

The specification provides four working examples of preparing thermotropic liquid crystalline polymer molded articles. These exemplary articles have thermal conductivities between 0.7 and 20 W/(m·K) and densities between 1.10 and less than 1.5 g/cm^3. Applicants agree with the Examiner that the specification does not provide working examples of preparing molded articles having the thermal conductivities or densities outside these ranges. However, it points out that "a small amount of thermal conductive filler can be incorporated into the thermotropic liquid crystalline composition in order to improve the thermal conductive polymer molded article in thermal conductivity." See page 10, lines 20-23. It also points out that "[w]hen the thermal conductive filler is incorporated into the thermal conductive polymer molded article ..., the density of the thermal conductive polymer molded article is increased." See page 11, lines 7-12. One skilled in the art, in view of these statements, would be able to prepare a molded article having a thermal conductivity and density outside the above-mentioned ranges by manipulating the amount of a thermal conductive filler. In other words, the specification provides adequate guidance to prepare such a molded article. Thus, contrary to the Examiner's belief, claims 1-9 are enabled.

Rejection under 35 U.S.C. § 102

The Examiner rejects claims 1-9 and 13 for anticipation on three grounds. Applicants will traverse each ground below:

I

The Examiner rejects claims 1, 2, 4, 5, 8, and 9 under 35 U.S.C. § 102 (e), relying on Valtriani et al., Macromol. Chem. Phys., 2001, 2202-2212 (Valtriani).

Applicants would like to point out that a 102(e) reference must be a patent or a patent application publication. As Valtriani, a journal publication, is neither a patent nor a patent application publication, it is clear that the Examiner errs in citing it as a 102(e) reference. Applicants nevertheless will traverse the Examiner's basis for rejection. Claim 1, the independent claim, will be discussed first.

Claim 1 covers an article prepared by a process of molding a thermotropic liquid crystalline polymer. In the process, the polymer is first melted by heating and then subjected to a magnetic field or an electric field. As a result, the article thus prepared has a thermal conductivity higher than that of an article formed by molding the thermotropic liquid crystalline polymer without application of a magnetic field or an electric field.

Valtriani discloses liquid crystalline polymers synthesized by transesterification of poly(ethylene terephthalate) with 4-acetoxybenzoic acid, diacetylated 4,4'-dihydroxybiphenyl, and terephthanlic acid. It mentions Rodrun® LC5000 in its "Introduction" section. See page 2203, left column, lines 9-13. The Examiner asserts that "[t]he claimed thermal conductive polymer molded article is inherently anticipated by Rodrun LC5000 (trademark)." See the Office Action, page 2, lines 24-25. He further asserts that claim 1 "recites using an old structure (LC5000) and the 'use' is directed to a result or property of that structure, then the claim is anticipated." See the Office Action, page 3, lines 1-4. Judging from the above statements, Applicants believe that the Examiner has mistakenly thought that Rodrun® LC5000 is a counterpart of the molded article covered by claim 1. As demonstrated in Example 1 of the present specification, Rodrun® LC5000 was a starting polymer used to prepare a thermal conductive polymer molded article following the process set forth in claim 1. Clearly, Rodrun®

LC5000 corresponds to the thermotropic liquid crystalline polymer recited in claim 1 (a starting polymer required to prepare the article), not the article. The article covered by claim 1 is a molded form of a liquid crystalline polymer (e.g., Rodrun® LC5000). It has a different structure than the starting polymer. Thus, the Examiner errs in asserting that the claimed "article is inherently anticipated by Rodrun LC5000 (trademark)." Nowhere is mentioned in Valtriani an article made by molding Rodrun® LC5000. Thus, claim 1 is novel over Valtriani.

Claim 1 can also be distinguished from Valtriani on a second and independent ground. The molded article covered by claim 1 is prepared by a unique process, in which a thermotropic liquid crystalline polymer (e.g., Rodrun® LC5000) is first melted and then subjected to an electric or a magnetic field. The polymer in the article thus prepared is oriented orderly and differs from the starting polymer, which is randomly oriented. This is evidenced by the fact that the molded article prepared by the unique process has a higher thermal conductivity than an article prepared by a process without application of an electric or a magnetic field. As Valtriani does not disclose this unique process, it follows that it also does not disclose the unique article prepared by this process. In other words, claim 1 is novel over Valtriani.

For the same reasons set forth above, claims 2-9, dependent from claim 1, are also not anticipated by Valtriani.

II

The Examiner rejects claims 1, 2, 4, 5, 7-9, and 13 under 35 U.S.C. § 102 (b), relying on Bushida et al., US Patent 6,154,028 (Bushida).

Bushida discloses a magnetic sensor device containing a magnetic element and a wire wound around the magnetic element. According to Bushida, the magnetic sensor device can be covered with a resin using injection molding or some other technique to form a specified shape. For example, melted Rod Run LC5000 can be injected into a mold cavity around the magnetic sensor device at 300°C. See column 14, lines 43-49. Bushida does not mention applying a magnetic field or an electric field to the melted resin during fabrication of the resin-covered

device.[1] Thus, Bushida's process of making the device is different from the unique process required by claim 1, in which a magnetic field or an electric field is applied to a melted polymer. As mentioned above, the unique process results in formation of a unique article having an orderly oriented polymer. Bushida's device, prepared by a process in which a magnetic field or an electric field is applied, is therefore different from the article covered by claim 1. In other words, claim 1 is not anticipated by Bushida.

For the same reasons set forth above, claims 2, 4, 5, and 7-9 are also not anticipated by Bushida.

Applicants now turn to claim 13. This claim covers a method for controlling the thermal conductivity of a thermal conductive polymer molded article. The method includes melting a thermotropic liquid crystalline polymer, and then applying a magnetic field or an electric field to the melted polymer. As mentioned above, Bushida discloses melting a polymer, but not applying a magnetic field or an electric field to the melted polymer. Clearly, it does not anticipate claim 13.

III

The Examiner rejects claims 1-5 and 7-9 under 35 U.S.C. § 102 (b), relying on Nagashima et al. US Patent 5,847,039 (Nagashima).

Nagashima discloses a resin composition containing a liquid crystalline polymer and an inorganic compound. Nowhere is mentioned in this reference the unique process required by claim 1, i.e., applying a magnetic field or an electric field to a melted polymer. As discussed above, the article prepared by the unique process required by claim 1 is different from that prepared by a process in which a magnetic field or an electric field is not applied. Since Nagashima does not disclose this unique process, it follows that this reference does not disclose the article covered by claim 1. In other words, claim 1 is not anticipated by Nagashima. For the same reasons, claims 2-5 and 7-9 are also not anticipated by Nagashima.

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[1] Bushida does mention applying magnetic fields to a magnetic sensor device at room temperature to measure inductance values. See column 15, lines13-19. At room temperature, resin is not melted. Thus, Bushida at most teaches applying a magenetic field to an un-melted polymer. This is different from the process recited in claims 1 and 13, in which a magnetic or electric field is applied to a melted polymer.

CONCLUSION

The Examiner indicates that claims 10-12 are allowed. Applicants submit that claims 1-9 and 13 are enabled and novel over the cited references in view of the above remarks and respectively request the allowance of these claims.

Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 10-12-05

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